DEFENSE INFORMATION SYSTEMS AGENCY
P. O. BOX 549
FORT MEADE, MARYLAND 20755-0549

IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **16 Dec 11**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Special Interoperability Test Certification of the Avaya Lightweight Directory Access Protocol (LDAP) Database (DB) Multimedia Communications Platform (MCP) International Business Machine (IBM) 3550 Server with Release Level 13.0.18

References: (a) DoD Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (e), see Enclosure 1

1. References (a) and (b) establish the Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Special Interoperability Test Certification of the Avaya LDAP DB MCP IBM 3550 Server with Release Level 13.0.18hereinafter referred to as the System Under Test (SUT), meets all the critical interoperability requirements and is certified as interoperable for joint use within the Defense Information System Network (DISN) as a Real Times Services (RTS) Routing Database and is certified for joint use within the DISN. The SUT meets the critical interoperability requirements set forth in Reference (c) using test procedures derived from Reference (d). The SUT is certified solely with the Avaya CS2100 MFSS and the Avaya Aura AS5300 LSC Unified Capabilities (UC) products listed on the UC Approved Product List. No other configurations, features, or functions, except those cited within this memorandum, are certified by JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date the SUT was posted on the Unified Capabilities (UC) Approved Products List (APL) (19 April 2011).

3. This finding is based on interoperability testing conducted by JITC, review of the vendor's Letters of Compliance (LoC), and DISA Chief Information Officer (CIO) approval of the IA configuration. Interoperability testing was conducted by JITC, Fort Huachuca, Arizona, from 26 through 30 June and from 4 through 8 October 2010. Original DISA adjudication of outstanding test discrepancy reports and review of the vendor's LoC was completed on 26 October 2010. The DISA CIO has reviewed the Information Assurance (IA) Assessment Report for the SUT, Reference (e), and based on the findings in the report has granted an Authority to Operate (ATO) on 13 April 2011. The acquiring agency or site will be responsible for the DoD Information Assurance Certification and Accreditation Process (DIACAP) accreditation. The JITC certifies the SUT as meeting the Unified Capabilities Requirement (UCR) for RTS Routing Database

Server requirements. Enclosure 2 documents the test results and describes the tested network and system configurations including specified patch releases.

4. The interface, Capability Requirements (CR) and Functional Requirements (FR), and component status of the SUT is listed in Tables 1 and 2. The threshold CR/FR for RTS Routing Database Servers are established by Section 5.3.2.23 of Reference (c) and were used to evaluate the interoperability of the SUT.

Table 1. SUT Interface Interoperability Status

Interface	Critical	UCR Reference	Threshold CR/FR[1]	Status	Remarks
10Base-X	No[2]	5.3.2.23	1, 2	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3i (10BaseT) interface.
100Base-X	No[2]	5.3.2.23	1, 2	Certified	The SUT met all critical CRs and FRs for the IEEE 802.3u (100BaseT) interface.
1000Base-X	No[2]	5.3.2.23	1, 2	Not Tested[3]	

NOTES:
1. The CR/FR requirements are contained in Table 2. The CR/FR ID numbers represent a roll-up of UCR requirements.
2. The UCR does not stipulate a minimum interface requirement for an RTS Routing Database Server.
3. The SUT does not offer a 1000BASEX interface. Since this is not a required interface for an RTS Routing Database Server there is no operational impact.

LEGEND:

802.3i	10 Megabits Per Second Base Band over Twisted Pair	ID	Identification
802.3u	Standard for carrier sense multiple access with collision detection at 100 Megabits per Second	IEEE	Institute of Electrical and Electronics Engineers
		RTS	Real Times Server
CR	Capability Requirement	SUT	System Under Test
FR	Functional Requirement	UCR	Unified Capabilities Requirements

Table 2. SUT CRs and FRs Status

CR/FR ID	Capability/Function	Applicability	UCR Reference	Status	Remarks
1	**RTS Routing Database Router**				
	The RTS Routing Database shall be able to accept Commercial Cost Avoidance queries from the LSC, where this query contains the "PSTN called number" from the "99 dialed PSTN number" call request from the LSC end user.	Required	5.3.2.23	Met	
	The RTS Routing Database shall be capable of storing associations of PSTN numbers	Required	5.3.2.23	Met	
	When the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query matches a 10-digit DSN number stored in the database, the database shall include that 10-digit DSN number in the query response that it sends back to the LSC.	Required	5.3.2.23	Met	
	When the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query does not match any 10-digit DSN number stored in the Database, the Database shall return a "Number not found" indication in the query response that it sends back to the LSC.	Required	5.3.2.23	Met	
	The query-response interface between the LSC and the RTS Routing Database shall be LDAP Version 3 (v3) over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510.	Required	5.3.2.23	Met	This capability requirement was verified by vendor LoC.
	The encoding of the LDAPv3 messages and data schema used on the DB query interface between the LSC and the RTS Routing Database shall follow the BER of ASN.1, consistent with Section 5.1, Protocol Encoding, of RFC 4511.	Required	5.3.2.23	Met	This capability requirement was verified by vendor LoC.

Table 2. SUT CRs and FRs Status (continued)

CR/FR ID	Capability/Function	Applicability	UCR Reference	Status	Remarks
1	**RTS Routing Database Server (continued)**				
	The DB query interface between the LSC and the RTS Routing Database shall be secured using TLS, consistent with the requirements for securing AS-SIP messages using TLS in UCR 2008, Change 1, Section 5.4, Information Assurance Requirements.	Required	5.3.2.23	Met	
	The DB query interface between the LSC and the RTS Routing Database shall traverse the data firewalls (and not the RTS EBC firewalls) at both the LSC and RTS Routing Database sites.	Required	5.3.2.23	Met	The SUT was tested in a simulated operational environment with a firewall separate from the EBC as depicted in figure 2-2.
	The DB query interface between the LSC and the RTS Routing Database shall traverse the CE Routers at both the LSC and RTS Routing Database sites, using the UCR 2008, Change 1, DSCP for OA&M traffic, and the associated CE Router queues.	Required	5.3.2.23	Met	
	The DB update interface between the LSC and the RTS Routing Database shall also be LDAPv3 over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510.	Required	5.3.2.23	Met	This capability requirement was verified by vendor LoC.
2	IPv6	Required	5.3.5.4	Partially Met	This capability requirement was verified by vendor LoC with minor discrepancies. See Note.

NOTE: These TDR's have been adjudicated as minor by DISA on 14 February 2011.

LEGEND:

ASN.1	Abstract Syntax Notation One	IPv6	Internet Protocol version 6
AS-SIP	Assured Services Session Initiated Protocol	LDAPv3	Lightweight Directory Access Protocol version 3
BER	Bit Error Rate	LoC	Letter of Compliance
CE	Customer Edge	LSC	Local Session Controller
CONUS	Continental United States	OA&M	Operations, Administration, and Management
CR	Capability Requirement	OCONUS	Outside Continental United States
DB	Data Base	PSTN	Public Switched Telephone Network
DSCP	Differentiated Services Code Point	RFC	Request for Comment
DSN	Defense Switched Network	RTS	Real Time Services
EBC	Edge Boundary Controller	SUT	System Under Test
FR	Functional Requirement	TDR	Test Discrepancy Report
ID	Identification	TLS	Transport Layer Security
IP	Internet Protocol	UCR	Unified Capabilities Requirements

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-

mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.

6. The JITC point of contact is Capt Stéphane Arsenault, DSN 879-5269, commercial (520) 538-5269, FAX DSN 879-4347, or e-mail to stephane.arsenault@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 1022501.

FOR THE COMMANDER:

2 Enclosures a/s

for BRADLEY A. CLARK
Chief
Battlespace Communications Portfolio

JITC Memo, JTE, Special Interoperability Test Certification of the Avaya Lightweight Directory Access Protocol (LDAP) Database (DB) Multimedia Communications Platform (MCP) International Business Machine (IBM) 3550 Server with Release Level 13.0.18

Distribution (electronic mail):
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National Security Agency, DT
Defense Information Systems Agency, TEMC
Office of Assistant Secretary of Defense (NII)/DOD CIO
U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities Division, J68
Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

(c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008, Change 1," 22 January 2010
(d) "Avaya Hybrid Routing and Commercial Cost Avoidance Draft Test Plan", 10 May 2010
(e) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Avaya Real Time Services (RTS) Routing Database (DB) Server International Business Machine (IBM) 3550 (Tracking Number 1022501)," 25 March 2011

CERTIFICATION TESTING SUMMARY

1. SYSTEM TITLE. Special Interoperability Test Certification of the Avaya Lightweight Directory Access Protocol (LDAP) Database (DB) Multimedia Communications Platform (MCP) International Business Machine (IBM) 3550 Server with Release Level 13.0.18, hereinafter referred to as the System Under Test (SUT).

2. SPONSOR. Defense Information Systems Agency (DISA).

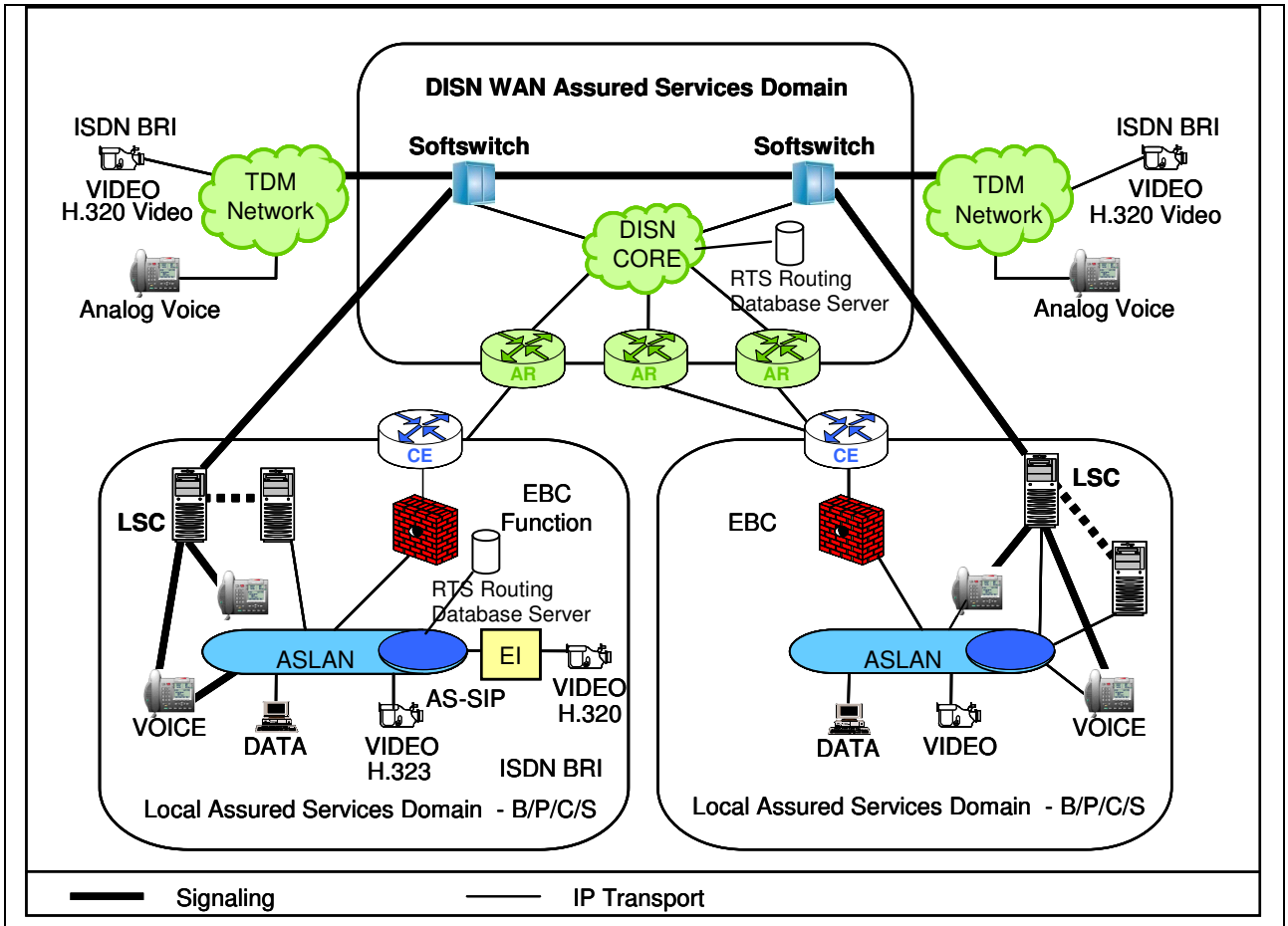
3. SYSTEM POC. Ryan Kuseski GS15, DISA, RTS Engineering, PO Box 4502, Arlington VA, 22204-4502, e-mail: ryan.kuseski@disa.mil.

4. TESTER. Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.

5. SYSTEM DESCRIPTION. The Unified Capabilities Requirements (UCR) defines a Real Time Services (RTS) Routing Database Server as a system that is deployed in the Defense Information System Network (DISN) that contains records, which list both the commercial Public Switch Telephone Network (PSTN) number and the corresponding Defense Switch Network (DSN) number for a select set of DISN end users.

The SUT is a server used to support the Hybrid Routing (HR) and Commercial Cost Avoidance (CCA) features. The SUT is certified solely with the Avaya CS2100 Multifunction Softswitch (MFSS) and the Avaya Aura AS5300 Local Session Controller (LSC) Unified Capabilities (UC) products listed on the UC Approved Product List (APL). The HR feature is used to send calls either re-route calls back to the Time Division Multiplex (TDM) network or continue to call to a VoIP Client via the UC Internet Protocol (IP) network. The SUT uses a Redhat Linux Operating System application that runs on the X3550 IBM Server. Furthermore, the CCA feature is used to dynamically reroute PSTN dialed calls from an LSC to the DSN, which avoids a commercial toll charge.

6. OPERATIONAL ARCHITECTURE. Figure 2-1 depicts the DISN UC notional operational architecture that the SUT may be used in.



LEGEND:

ASLAN	Assured Services Local Area Network
AS-SIP	Assured Services – Session Initiation Protocol
B/P/C/S	Base / Post / Camp / Station
BRI	Basic Rate Interface
CE	Customer Edge (CE Router)
DISN	Defense Information Systems Network
EBC	Edge Border Controller
IP	Internet Protocol
ISDN	Integrated Services Digital Network
LSC	Local Session Controller
RTS	Real Times Services
TDM	Time Division Multiplex
WAN	Wide Area Network

Figure 2-1. DISN Unified Capabilities Notional Operational Architecture

7. INTEROPERABILITY REQUIREMENTS. The interface, Capability Requirements (CR) and Functional Requirements (FR), Information Assurance (IA), and other requirements for RTS Routing Database Servers are established by Section 5.3.2.23 of Reference (c).

7.1 Interfaces. The SUT uses the external interfaces to connect to the Global Information Grid network. Table 2-1, shows the physical interfaces supported by the SUT. Table 2-1 also documents the physical interfaces and the associated standards.

Table 2-1. SUT Interface Interoperability Requirements

Interface	Critical	UCR Reference	Criteria[1]
10Base-X	No[2]	5.3.2.23	Support minimum threshold CRs/FRs (ID # 1-3) and meet interface criteria for IEEE 802.3i
100Base-X	No[2]	5.3.2.23	Support minimum threshold CRs/FRs (ID # 1-3) and meet interface criteria for IEEE802.3u
1000Base-X	No[2]	5.3.2.23	Support minimum threshold CRs/FRs (ID # 1-3) and meet interface criteria for IEEE802.

NOTES:
1. CR/FR requirements are contained in Table 2-2. CR/FR numbers represent a roll-up of UCR requirements.
2. Must provide a minimum of one of the listed interfaces.

LEGEND:

802.3i	10 Megabits Per Second Base Band over Twisted Pair	FR	Functional Requirement
		ID	Identification
802.3u	Standard for carrier sense multiple access with collision detection at 100 Megabits per Second	IEEE	Institute of Electrical and Electronics Engineers
		SUT	System Under Test
CR	Capability Requirement		

7.2 CR and FR. RTS Routing Database Servers have required and conditional features and capabilities that are established by Section 5.3.2.23 of the UCR. The SUT does not need to provide non-critical (conditional) requirements. If they are provided, they must function according to the specified requirements. The SUTs features and capabilities and its aggregated requirements in accordance with (IAW) the RTS Routing Database Server requirements are listed in Table 2-2.

Table 2-2. SUT CRs and FRs

CR/ FR ID	Capability/ Function	Applicability	UCR Reference	Criteria
1	The RTS Routing Database shall be able to accept Commercial Cost Avoidance queries from the LSC, where this query contains the "PSTN called number" from the "99 dialed PSTN number" call request from the LSC end user.	Required	5.3.2.23	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.
	The RTS Routing Database shall be capable of storing associations of PSTN numbers	Required	5.3.2.23	

Table 2-2. SUT CRs and FRs (continued)

CR/ FR ID	Capability/ Function	Applicability	UCR Reference	Criteria
1	When the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query matches a 10-digit DSN number stored in the database, the database shall include that 10-digit DSN number in the query response that it sends back to the LSC.	Required	5.3.2.23	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.
	When the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query does not match any 10-digit DSN number stored in the Database, the Database shall return a "Number not found" indication in the query response that it sends back to the LSC.	Required	5.3.2.23	
	The query-response interface between the LSC and the RTS Routing Database shall be LDAP Version 3 (v3) over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510.	Required	5.3.2.23	
	The encoding of the LDAPv3 messages and data schema used on the DB query interface between the LSC and the RTS Routing Database shall follow the BER of ASN.1, consistent with Section 5.1, Protocol Encoding, of RFC 4511.	Required	5.3.2.23	
	The DB query interface between the LSC and the RTS Routing Database shall be secured using TLS, consistent with the requirements for securing AS-SIP messages using TLS in UCR 2008, Change 1, Section 5.4, Information Assurance Requirements.	Required	5.3.2.23	
	The DB query interface between the LSC and the RTS Routing Database shall traverse the data firewalls (and not the RTS EBC firewalls) at both the LSC and RTS Routing Database sites.	Required	5.3.2.23	

Table 2-2. SUT CRs and FRs (continued)

CR/ FR ID	Capability/ Function	Applicability	UCR Reference	Criteria
	The DB query interface between the LSC and the RTS Routing Database shall traverse the CE Routers at both the LSC and RTS Routing Database sites, using the UCR 2008, Change 1, DSCP for OA&M traffic, and the associated CE Router queues.	Required	5.3.2.23	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.
	The DB update interface between the LSC and the RTS Routing Database shall also be LDAPv3 over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510.	Required	5.3.2.23	
2	IPv6	Required	5.3.5.4	

LEGEND:

ASN.1 Abstract Syntax Notation One
AS-SIP Assured Services Session Initiated Protocol
BER Bit Error Rate
CE Customer Edge
CONUS Continental United States
CR Capability Requirement
DB Data Base
DSCP Differentiated Services Code Point
DSN Defense Switched Network
EBC Edge Boundary Controller
FR Functional Requirement
ID Identification
IP Internet Protocol
IPv6 Internet Protocol version 6
LDAPv3 Lightweight Directory Access Protocol version 3
ID Identification
IP Internet Protocol
IPv6 Internet Protocol version 6
LDAPv3 Lightweight Directory Access Protocol version 3
LSC Local Session Controller
OA&M Operations, Administration, and Management
OCONUS Outside Continental United States
PSTN Public Switched Telephone Network
RFC Request for Comment
RTS Real Time Services
TLS Transport Layer Security
UCR Unified Capabilities Requirements

7.3 IA. Table 2-3 details the IA requirements applicable to the RTS Routing Database products.

Table 2-3. SUT IA Requirements

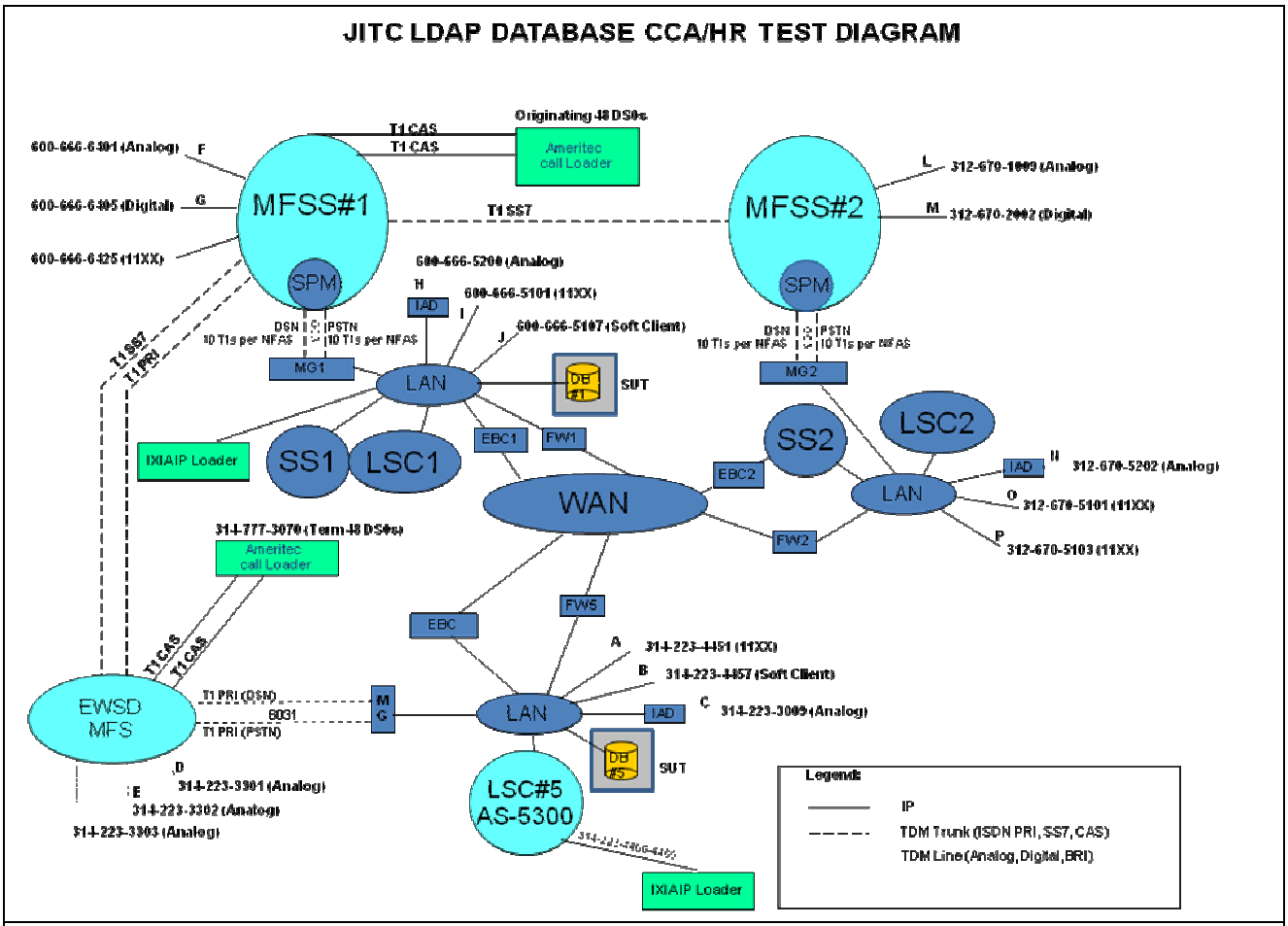
Requirement	Applicability	UCR Reference	Criteria	Remarks
General Requirements	Required	5.4.6.2	Detailed requirements and associated criteria for RTS Routing Database Server are listed in Section 5.4 of Reference (c).	
Authentication	Required	5.4.6.2.1		
Integrity	Required	5.4.6.2.2		
Confidentiality	Required	5.4.6.2.3		
Non-Repudiation	Required	5.4.6.2.4		
Availability	Required	5.4.6.2.5		

LEGEND:

RTS Real Time Services
IA Information Assurance
IATP IA Test Plan
UCR Unified capabilities Requirements

7.4 Other. None

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC, Fort Huachuca, Arizona in a manner and configuration similar to that of an operational environment. Testing the system's required functions and features was conducted using the test configuration depicted in Figure 2-2. Figure 2-2 was used to simulate operational voice traffic using Ameritec bulk call loaders from the TDM network to invoke the HR features and manual calls were placed within in the UC network to invoke the CCA feature. In addition, the Ixia IP loader was used to invoke LDAP CCA queries to the SUT @ approximately 44 calls per second.



LEGEND:

APL	Approved Products List
ASLAN	Assured Services Local Area Network
CER	Customer Edge Router
CR	Capability Requirement
DISA	Defense Information Systems Agency
DS1	Digital Signal Level 1 (1.544 Mbps) (2.048 Mbps European)
DS3	Digital Signal Level 3
EIA	Electronic Industries Alliance
FCAPS	Fault, Configuration, Accounting, Performance, and Security
FR	Functional Requirement
ID	Identification
IEEE	Institute of Electrical and Electronics Engineers
IPv6	Internet Protocol version 6
kbps	kilobits per second
LSC	Local Session Controller
MFSS	Multi-Function Soft Switch
ms	milliseconds
MTU	Maximum Transmission Unit
NM	Network Management
NMS	Network Management System
RFC	Request for Comment
SQF	System Quality Factors
SUT	System Under Test
T1	Digital Transmission Link Level 1 (1.544 Mbps)
T3	Digital Transmission Link Level 1
UC	Unified Capabilities
UCR	Unified Capabilities Requirements
VVoIP	Voice and Video over Internet Protocol
WAN	Wide Area Network

Figure 2-2. SUT Test Configuration

9. SYSTEM CONFIGURATIONS. Table 2-3 provides the system configurations and hardware and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine its interoperability capability with associated network devices and network traffic.

Table 2-3. Tested System Configurations

<table>
<tr><th>System Name</th><th colspan="3">Equipment</th></tr>
<tr><td rowspan="2">Required Ancillary Equipment</td><td colspan="3">PKI</td></tr>
<tr><td colspan="3">Syslog</td></tr>
<tr><td colspan="4">Avaya CS2100 XA-Core SE09.1 with AS5300 MFSS, Release 2.0.</td></tr>
<tr><td colspan="4">Avaya Aura AS5300 LSC, Release 2.0</td></tr>
<tr><td colspan="4">Siemens EWSD MFS, Release 19d Patch Set 46</td></tr>
<tr><td colspan="4">Juniper ISG 1000, Rel. 6.2R2</td></tr>
<tr><td rowspan="12">Avaya RTS Routing Database Server</td><td>Hardware</td><td>Hardware Components</td><td>Software</td></tr>
<tr><td rowspan="11">X3550 IBM Server</td><td rowspan="11">Model 7978 AC1
CPU 2 x Quad-Core Intel Xeon Processor E5420, 2.5GHz, 12 MB L2 cache, 1333MHz FSB, 80w
Memory 8 GB PC2-5300 CL5 ECC DDR2 Chipkill FB DIMM 667MHz, 8 GB PC2-5300 CL5 ECC DDR2 Chipkill FB DIMM 667MHz
Hard Disk 2 x 73 GB 3.5-inch SAS, 15000 RPM, hot swap; RAID-1 mirrored using IBM ServeRAID 8k-l SAS controller (hardware RAID-1)</td><td>Release Level 13.0.18</td></tr>
<tr><td>Redhat Linux 5.4</td></tr>
<tr><td>Ldap 22.6.18-194.el5</td></tr>
<tr><td>Tivoli Directory Server 6.2.0.12</td></tr>
<tr><td>Websphere 6.1.0.29</td></tr>
<tr><td>DB2 ESE 9.5.0.5 s091123 MI00316 FixPack 5</td></tr>
<tr><td>GSKit 7.0-4.28</td></tr>
<tr><td>Openssh 4.3p2-41</td></tr>
<tr><td>OpenSSL 0.98e-12.el5_4.6</td></tr>
<tr><td>JRE 6 Update 20</td></tr>
<tr><td>Bzip 21.0.3-4</td></tr>
<tr><td>Libxml 22.6.26-2.1.2.8</td></tr>
<tr><td>Kerberos 5.1.6.1-36 (Kerberos 5 Library Version 1.6.1-36)</td></tr>
</table>

LEGEND:

AS	Application Server	LSC	Local Session Controller
CS	Communications Server	MFS	Multi-Function Switch
DB	Data Base	MFSS	Multifunction Soft Switch
ESE	Enterprise Server Edition	PKI	Public Key Infrastructure
EWSD	Elektronisches Wählsystem Digital	RTS	Real Time Services
GSKit	Global Security Kit	SS	Soft Switch
JRE	Java Runtime Environment	Syslog	System Log
		XA	Extended Architecture

10. TESTING LIMITATIONS. None

11. INTEROPERABILITY EVALUATION RESULTS. The SUT meets the critical interoperability requirements for a RTS Routing Database Server in accordance with Section 5.3.2.23 of the UCR and is certified for joint use solely with the Avaya CS2100

MFSS and the Avaya Aura AS5300 LSC UC products listed on the UC APL. Additional discussion regarding specific testing results is located in subsequent paragraphs.

11.1 Interfaces. The interface status of the SUT is provided in Table 2-4.

Table 2-4. SUT Interface Interoperability Status

Interface	Critical	UCR Reference	Status	Criteria (See Note 1.)
10Base-X	No[2]	5.3.2.23	Certified	Support minimum threshold CRs/FRs (1-3) and meet interface criteria for IEEE 802.3i
100Base-X	No[2]	5.3.2.23	Certified	Support minimum threshold CRs/FRs (1-3) and meet interface criteria for IEEE802.3u
1000Base-X	No[2]	5.3.2.23	Not Tested	See Note 3

NOTES:
1. CR/FR requirements are contained in Table 2-2. CR/FR numbers represent a roll-up of UCR requirements.
2. Must provide a minimum of one of the listed interfaces.
3. The SUT does not offer a 1000BASEX interface. Since this is not a required interface for an RTS Database Server there is no operational impact.

LEGEND:

802.3i	10 Megabits Per Second Base Band over Twisted Pair	CR	Capability Requirement
		FR	Functional Requirement
802.3u	Standard for carrier sense multiple access with collision detection at 100 Megabits per Second	IEEE	Institute of Electrical and Electronics Engineers
		SUT	System Under Test

11.2 Capability Requirements (CR) and Functional Requirements (FR). The SUT CR and FR status is depicted in Table 2-5.

Table 2-5. SUT CRs and FRs Status

CR/ FR ID	Capability/ Function	Applicability	UCR Reference	Status	Criteria	Remarks
1	**RTS Routing Database Router**					
	The RTS Routing Database shall be able to accept Commercial Cost Avoidance queries from the LSC, where this query contains the "PSTN called number" from the "99 dialed PSTN number" call request from the LSC end user.	Required	5.3.2.23	Met	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.	
	The RTS Routing Database shall be capable of storing associations of PSTN numbers	Required	5.3.2.23	Met		

Table 2-5. SUT Capability Requirements and Functional Requirements Status (continued)

CR/ FR ID	Capability/ Function	Applicability	UCR Reference	Status	Criteria	Remarks
1	**RTS Routing Database Router**					
	When the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query matches a 10-digit DSN number stored in the database, the database shall include that 10-digit DSN number in the query response that it sends back to the LSC.	Required	5.3.2.23	Met	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.	
	When the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query does not match any 10-digit DSN number stored in the Database, the Database shall return a “Number not found” indication in the query response that it sends back to the LSC.	Required	5.3.2.23	Met		
	The query-response interface between the LSC and the RTS Routing Database shall be LDAP Version 3 (v3) over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510.	Required	5.3.2.23	Met		This capability requirement was verified by vendor LoC.

Table 2-5. SUT Capability Requirements and Functional Requirements Status (continued)

CR/ FR ID	Capability/ Function	Applicability	UCR Reference	Status	Criteria	Remarks
1	**RTS Routing Database Router**					
	The encoding of the LDAPv3 messages and data schema used on the DB query interface between the LSC and the RTS Routing Database shall follow the BER of ASN.1, consistent with Section 5.1, Protocol Encoding, of RFC 4511.	Required	5.3.2.23	Met	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.	This capability requirement was verified by vendor LoC.
	The DB query interface between the LSC and the RTS Routing Database shall be secured using TLS, consistent with the requirements for securing AS-SIP messages using TLS in UCR 2008, Change 1, Section 5.4, Information Assurance Requirements.	Required	5.3.2.23	Met		
	The DB query interface between the LSC and the RTS Routing Database shall traverse the data firewalls (and not the RTS EBC firewalls) at both the LSC and RTS Routing Database sites.	Required	5.3.2.23	Met		The SUT was tested in a simulated operational environment with a firewall separate from the EBC as depicted in Figure 2-2
	The DB query interface between the LSC and the RTS Routing Database shall traverse the CE Routers at both the LSC and RTS Routing Database sites, using the UCR 2008, Change 1, DSCP for OA&M traffic, and the associated CE Router queues.	Required	5.3.2.23	Met		

Table 2-5. SUT Capability Requirements and Functional Requirements Status (continued)

CR/FR ID	Capability/ Function	Applicability	UCR Reference	Status	Criteria	Remarks
	RTS Routing Database Router					
1	The DB update interface between the LSC and the RTS Routing Database shall also be LDAPv3 over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510.	Required	5.3.2.23	Met	Detailed requirements and associated criteria for RTS Routing Database Servers are listed in the UCR reference.	This capability requirement was verified by vendor LoC.
2	IPv6	Not Required	5.3.5.4	Partially Met		This capability requirement was verified by vendor LoC with minor discrepancies. See Note.

NOTE These TDR's have been adjudicated as minor by DISA on 14 February 2011

LEGEND:

ASN.1	Abstract Syntax Notation One	IPv6	Internet Protocol version 6
AS-SIP	Assured Services Session Initiated Protocol	LDAPv3	Lightweight Directory Access Protocol version 3
BER	Bit Error Rate	LoC	Letter of Compliance
CE	Customer Edge	LSC	Local Session Controller
CONUS	Continental United States	OA&M	Operations, Administration, and Management
CR	Capability Requirement	OCONUS	Outside Continental United States
DB	Data Base	PSTN	Public Switched Telephone Network
DSCP	Differentiated Services Code Point	RFC	Request for Comment
DSN	Defense Switched Network	RTS	Real Time Services
EBC	Edge Boundary Controller	SUT	System Under Test
FR	Functional Requirement	TDR	Test Discrepancy Report
ID	Identification	TLS	Transport Layer Security
IP	Internet Protocol	UCR	Unified Capabilities Requirements

a. RTS Routing Database Requirements.

(1) IAW Section 5.3.2.23 of UCR 2008 Change 1, the RTS Routing Database shall be able to accept Commercial Cost Avoidance queries from the LSC, where this query contains the "PSTN called number" from the "99 dialed PSTN number" call request from the LSC end user. The SUT met this requirement through testing.

(2) IAW Section 5.3.2.23 of UCR 2008 Change 1, the RTS Routing Database shall be capable of storing associations of PSTN numbers. The SUT met this requirement through testing.

(3) IAW Section 5.3.2.23 of UCR 2008 Change 1, when the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query matches a 10-digit DSN number stored in the database, the database shall include that 10-digit DSN number in the query response that it sends back to the LSC. The SUT met this requirement through testing.

(4) IAW Section 5.3.2.23 of UCR 2008 Change 1, when the RTS Routing Database determines that the PSTN called number (CONUS or OCONUS) received from the LSC in the Commercial Cost Avoidance query does not match any 10-digit DSN number stored in the Database, the Database shall return a "Number not found" indication in the query response that it sends back to the LSC. The SUT met this requirement through testing.

(5) IAW Section 5.3.2.23 of UCR 2008 Change 1, the query-response interface between the LSC and the RTS Routing Database shall be LDAP Version 3 (v3) over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510. The SUT met this requirement with a vendor's Letter of Compliance (LoC) and testing.

(6) IAW Section 5.3.2.23 of UCR 2008 Change 1, the encoding of the LDAPv3 messages and data schema used on the DB query interface between the LSC and the RTS Routing Database shall follow the BER of ASN.1, consistent with Section 5.1, Protocol Encoding, of RFC 4511. The SUT met this requirement with a vendor's LoC and testing.

(7) IAW Section 5.3.2.23 of UCR 2008 Change 1, the DB query interface between the LSC and the RTS Routing Database shall be secured using TLS, consistent with the requirements for securing AS-SIP messages using TLS in UCR 2008, Change 1, Section 5.4, Information Assurance Requirements. The SUT met this requirement through testing.

(8) IAW Section 5.3.2.23 of UCR 2008 Change 1, the DB query interface between the LSC and the RTS Routing Database shall traverse the data firewalls (and not the RTS EBC firewalls) at both the LSC and RTS Routing Database sites. The SUT met this requirement through testing.

(9) IAW Section 5.3.2.23 of UCR 2008 Change 1, the DB query interface between the LSC and the RTS Routing Database shall traverse the CE Routers at both the LSC and RTS Routing Database sites, using the UCR 2008, Change 1, DSCP for OA&M traffic, and the associated CE Router queues. The SUT met this requirement through testing.

(10) IAW Section 5.3.2.23 of UCR 2008 Change 1, the DB update interface between the LSC and the RTS Routing Database shall also be LDAPv3 over TLS over IP. This LDAPv3 interface shall be compliant with RFC 4510. The SUT met this requirement with a vendor's LoC and testing.

b. IPv6 Requirements. IPv6 capability is currently satisfied by a vendor LoC with the following exceptions:

(1) The SUT does not support the capability to enable or disable Destination Unreachable Messages IAW Section 5.3.5.4.7 of UCR 2008 Change 1. This

requirement has been adjudicated by DISA as having a minor impact.

(2) The SUT does not support the Enabling or Disabling of Echo Reply Messages IAW Section 5.3.5.4.7 of UCR 2008 Change 1. This requirement has been adjudicated by DISA as having a minor impact.

11.3 Other. The SUT was assessed against HR requirements which are included in UCR 2008 change 2. The test results met the intent of these requirements by properly querying calls routed between the Avaya CS2100 MFSS or Wide Area Network SoftSwitch (WAN SS) via the media gateway. If a database entry was entered in the SUT for the calling number identification, the call continued via the IP network to the IP end instrument. If a database entry was not entered the call was rejected at the ISDN PRI interface with an unavailable number cause value (cause 1). When this cause is received by the CS2100 MFSS the call is routed to the next trunk group in the search algorithm. To support this functionality the following patches have to be applied to the CS2100 MFSS: CXA09P9E, and CXA07P9R. Furthermore, when assigning the trunk group search algorithm the following two options must be considered for this functionality to work:

a. Option 1: The first search in the route must be configured as "D" (Direct) Route. The two route searches in the CS2100 MFSS that support this are Home Grid Route (HGRTE) or External Grid Route (EGRTE). The vendor has been directed to stipulate this required configuration in their deployment guide. This issue is pending review by the DISA engineers to determine the impact. The impact is that the HGRTE and EGRTE search algorithms allow for a maximum of three alternate route searches excluding the Direct Routes.

b. Option#2: If a search algorithm in the CS2100 MFSS includes a T1 triple search, then the T1 search can only include a single trunk group. The next trunk group in the search must be the first trunk group in triple 2 (T2). This configuration will allow for overflow and supports up to a maximum of 15 trunk group searches. This configuration stipulation will be included in the vendor’s deployment guide.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet). Information related to DSN testing is on the Telecom Switched Services Interoperability (TSSI) website at http://jitc.fhu.disa.mil/tssi. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly through government civilian or uniformed military personnel from the Unified Capabilities Certification Office (UCCO), e-mail: ucco@disa.mil.